What is Claimed:

1. A scrambling method for scrambling UWB (ultra wideband) data, the method comprising the steps of:

shifting a first bit string a first number of bits;

shifting a second bit string a second number of bits;

combining the first and second shifted bit strings;

generating scrambler control bits from the combined first and second shifted bit strings; and

scrambling at least a portion of the UWB data responsive to the generated scrambler control bits.

2. The method of claim 1, further including where the first bit string and the second bit string are randomly initialized.

3. The method of claim 2, wherein the first bit string and second bit strings are randomly initialized using a pseudo random sequence.

4. The method of claim 2, wherein the first bit string and second bit strings are randomly initialized using a random sequence.

5. The method of claim 1, wherein the scrambling method for scrambling UWB data is applied to each frame.

6. The method of claim 1, wherein the UWB data includes payload and non-payload data and the scrambling step scrambles the payload data.

7. The method of claim 6 wherein the method further comprises the step of:

selectively applying random frame reversion to the non-payload data.

8. The method of claim 7 wherein the step of selectively applying random frame reversion to the non-payload data includes the steps of:

generating a pseudo random sequence with an evenly distributed function;

selectively inverting a data sequence responsive to the pseudo random data sequence.

9. A scrambling method for scrambling ultra wideband (UWB) data having payload data and non-payload data, the method comprising the steps of:

scrambling the payload data using a pseudo random sequence configured for initialization using a seed set with substantially uncorrelated seed values; and

selectively applying random frame reversion to the non-payload data.

10. The method of claim 9 wherein the step of selectively applying random frame reversion to the non-payload data includes the steps of:

generating a random sequence with an evenly distributed function;

selectively inverting a data sequence responsive to the random data sequence.

11. A scrambler for scrambling UWB data, the scrambler comprising:

a first shift register to shift a first bit string a first number of bits;

a second shift register to shift a second bit string a second number of bits;

a combining circuit to combine the first and second shifted bit strings;

a third shift register to load the combined first and second shifted bit strings; and

a control circuit to generate scrambler control bits from the combined first and second shifted bit strings for scrambling at least a portion of the UWB data.

12. The scrambler of claim 11, further including a polynomial generator which produces a pseudo random sequence to initialize the first bit string and the second bit string.

13. The scrambler of claim 12, wherein the random sequence produced by the polynomial generator is greater than or equal to 15 bits.

14. The scrambler of claim 11, wherein the first shift register and the second shift registers are initialized responsive to a new frame.

15. The scrambler of claim 14, wherein each frame of the UWB data includes payload and non-payload data and the scrambler further comprises:

a selective random frame reversion circuit for selectively inverting at least the non-payload data of each scrambled frame.

16 he scrambler of claim 15 wherein the selective random frame reversion circuit comprises:

a random sequence generator to generate a pseudo random data sequence with an evenly distributed function; and

an inverter to selectively invert a data sequence responsive to the pseudo random data sequence.

17. A scrambler system for data whitening to reduce the PSD (power spectral density) of (ultra wide-band) UWB signals having payload data and non-payload data, the scrambler system comprising:

a scrambler configured to scramble the payload data, the scrambler comprising a linear feedback shift register configured for initialization using a seed set with substantially uncorrelated seed values; and

a selective random frame reversion circuit configured to selectively invert the non-payload data.

18. The scrambler of claim 17, wherein the seed set includes at least 4 seed values and wherein the seed value within the seed set has at least 16 bits.

19. The scrambler of claim 17 wherein the selective random frame reversion circuit includes:

a random sequence generator to generate a pseudo random sequence with an evenly distributed function; and

an inverter to invert a data sequence responsive to the random data sequence.

20. A computer readable carrier, including software that is configured to control a computer to implement a scrambling method for scrambling UWB data, the method including the steps of

shifting a first bit string a first number of bits;

shifting a second bit string a second number of bits;

combining the first and second shifted bit strings;

generating scrambler control bits from the combined first and second shifted bit strings; and

scrambling at least a portion of the UWB data responsive to the generated scrambler control bits.

21. A computer readable carrier including software that is configured to control a computer to implement a scrambling method for scrambling UWB data having payload data and non-payload data, the method comprising the steps of:

scrambling the payload data using a pseudo random sequence configured for initialization using a seed set with substantially uncorrelated seed values; and

selectively applying random frame reversion to the non-payload data, random frame reversion including the steps of:

generating a random sequence with an evenly distributed function;

selectively inverting a data sequence responsive to the random data sequence; and

transmitting the selectively inverted data sequence.